REMARKS

The Office Action mailed March 17, 2003 has been reviewed and carefully considered. Claim 12 is now added. Claims 1-12 are pending, of which claim 1 is the independent claim.

Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

Claims 1-11 were rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,880,018 to Boeck et al. ("Boeck") in view of U.S. Patent No. 6,159,845 to Yew ("Yew").

As to claim 1, its language explicitly requires "an etch stop layer (12) comprising silicon carbide."

Item 3 of the Office Action suggests that Boeck does not disclose that the etch stop layer comprises silicon carbide, but that the Yew reference does disclose an etch stop layer made of silicon carbide. Item 3 further suggests that motivation to combine the two references would have existed and that the combination would feature an etch stop layer comprising silicon carbide.

Although applicants agree that Boeck fails to disclose an etch stop layer comprising silicon carbide (col. 6, line 62 – col. 7, line 1), Yew likewise fails to disclose an etch stop layer of silicon carbide. Moreover, there is no motivation to combine the references, and any combination would not produce an etch stop layer "comprising silicon carbide."

Yew discloses an etch stop layer 106 that "can be formed from . . . silicon carbon" (col. 2, line 53: "silicon carbon"). Silicon carbon is not silicon carbide.

The Yew etch stop layer 106 has an etch rate that differs from that of the immediately adjacent top and bottom layers 108, 104 (col. 2, lines 50-61). The differing rates allows etching to be reliably stopped at the etch stop layer in creating the embodiment of FIG. 1A.

Yew subsequently applies a barrier layer 128 (FIG. 1B) whose composition is "tantalum nitride, tantalum, tungsten nitride or titanium nitride, for example" (col. 3, lines 21-23) and whose function is to prevent diffusion between conductive material 122, 124 and dielectric layers 108, 104 (col. 3, lines 23-26).

Next, Yew truncates the top of the resulting structure (FIG. 1C) which breaks the barrier layer 128 (the remaining portion is denoted 128a) and thereby exposing the conductive material 122a, 124a, i.e., the remainder of conductive material 122, 124.

The intention in later stages of the process, however, is to overlay the break with a dielectric layer 134 (FIG. 1E), which would, unless prevented, contact the exposed conductive material and cause diffusion between the exposed conductive material and the dielectric layer 134.

To prevent this diffusion, the barrier layer 128a is capped prior to the overlaying. The barrier cap layer 132 (FIG. 1D) performs this function, and, in sealing the barrier layer 128a, only incidentally comes partially into contact with the etch stop layer 106 which has already performed its etch stopping function and has no future etch stopping function. Accordingly, the barrier cap layer 132 is distinct from the etch stop layer 106. Therefore, disclosure in Yew that the barrier cap layer 132 can be made of silicon carbide does not imply or suggest that the Yew etch stop layer 106 comprises silicon carbide.

As set forth above, neither Boeck nor Yew disclose or suggest an etch stop layer comprising silicon carbide.

Moreover, Boeck also has a barrier layer 64, but the only break in the Boeck barrier layer 64 is covered by another barrier layer 70. Accordingly, there is no apparent motivation for using the Yew barrier cap layer in Boeck.

In addition, even if motivation were deemed to have existed, there is no apparent combination of the two references that features an etch stop layer comprising silicon carbide.

Item 13 of the Office Action suggests that applicants are "attacking references individually." The Office Action therefore appears to be suggesting that, although neither reference discloses an etch stop layer comprising silicon carbide, motivation would have existed to combine the references and the combination somehow features an etch stop layer comprising silicon carbide.

Item 3 of the Office Action, on page 3, suggests that motivation would have existed "to improve the device's performance since silicon carbide also provides hermetic and physical protection to the device after formation."

The purpose of an etch stop layer is to prevent over-etching during formation. Any adjacent, additional layers that are applied for sealing purposes are not the etch stop layer, especially if the intention is to seal the device after formation.

Claim 1 is therefore believed to be patentable over the applied references, alone or in combination, for at least all of the foregoing reasons.

As to claims 2-11, they depend from and thus include all the limitations of base claim 1, and are likewise deemed to be patentable for the same reason.

Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 12 has been added to more clearly point out particular aspects of the invention. Support for the amendment is found in the specification from page 3, line 20 to page 4, line 15.

In view of the foregoing amendments and remarks, it is believed that this application is now in condition for allowance. The Examiner is invited to contact the undersigned in the event of any perceived outstanding issues so that passage of the case to issue can be effected without the need for a further Office Action.

Respectfully submitted,

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